

CLAIMS

1. A clamp to retain an electrical transmission line within a passageway the clamp comprising:
 - a cross port communicating with the passageway;
 - an elongate looking body having a first end, a second end, and an outer portion contained within the cross port, a portion of the first end adapted to engage an outer diameter of the electrical transmission line, the first end engaging the outer diameter of the electrical transmission line;
 - a loading body, the loading body comprising a first end, a second end, and an outer portion contained within the cross port, the outer portion adapted to engage the cross port, the outer portion engaging the cross port, the first end forcefully engaging the second end of the elongate looking body placing the elongate looking body under compressive load.
2. The elongate looking body of claim one wherein the first end forms a generally rounded surface.
3. The elongate looking body of claim one wherein the second end forms a generally rounded surface.
4. The elongate looking body of claim one wherein the portion of the first end adapted to engage the outer diameter of the electrical transmission line is a slot.
5. The elongate looking body of claim four wherein the slot has ridges on its surface.

6. The elongate looking body of claim one wherein the outer portion contains grooves adapted to house a sealing mechanism, the sealing mechanism forming a seal between the cross port and the elongate looking body.

7. The elongate looking body of claim six wherein the outer portion contains one or more circumferential o-ring grooves.

8. The elongate looking body of claim one is made of metal.

9. The elongate looking body of claim eight wherein the metal is selected from the group consisting of steel, titanium, chrome, nickel, aluminum, iron, copper, tin, and lead.

10. The elongate looking body of claim nine wherein the steel is selected from the group consisting of viscount 44, D2, stainless steel, tool steel, and 4100 series steels.

11. The elongate looking body of claim one is made of a ceramic.

12. The elongate looking body of claim eleven wherein the ceramic is selected from the group consisting of cemented tungsten carbide, alumina, silicon carbide, silicone nitride, and polycrystalline diamond

13. The elongate looking body of claim one has a hardness of least 30 on a Rockwell C hardness scale.

14. The elongate looking body of claim one is generally cylindrical.

15. The loading body of claim one is generally cylindrical.

16. The loading body of claim one wherein the outer portion is tapered.
17. The loading body of claim one wherein the first end is a truncated cone.
18. The loading body of claim one wherein the first end is generally round.
19. The loading body of claim one wherein the first end is concave.
20. The loading body of claim one is a set screw.
21. The cross port of claim one is generally cylindrical.
22. The cross port of claim one is generally tapered.
23. The cross port of claim one is adapted to engage the outer portion of the loading body of claim one.
24. The cross port of claim twenty-three has a threaded portion to engage a set screw.
25. A system for mechanically retaining a coaxial cable in a passageway comprising:
 - a coaxial cable, the coaxial cable comprising a conductive tube and a conductive core within it,
 - a cross port communicating with the passageway,
 - an elongate looking body having a first end, a second end, and an outer portion contained within the cross port, a portion of the first

end adapted to engage the outer diameter of the conductive tube, the first end engaging the outer diameter of the conductive tube;

a loading body, the loading body comprising a first end, a second end, and an outer portion contained within the cross port, the outer portion engaging the cross port, the first end forcefully engaging the second end of the elongate looking body placing the elongate looking body under compressive load.

26. The system of claim twenty-five wherein the conductive tube has an elasticity such that the conductive tube is in tension.

27. The system of claim twenty-five wherein the loading body is torqued to at least 15 foot-pounds force.

28. A system for mechanically retaining a coaxial cable for use in a rotary drill string, the drill string comprising individual drill components, each drill component containing the coaxial cable; the system comprising:

a drill pipe with a uniform internal diameter having a box end tool joint and a pin end tool joint;

a first and second passageway in each pin end and box end tool joint which is connected to the internal pipe diameter and runs along the longitudinal axis of the pipe,

a first cross port disposed in the pin end tool joint and a second cross port disposed in the box end tool joint, each cross port in communication with the respective passageway in each pin and box end tool joint;

a coaxial cable, the coaxial cable comprising a conductive tube and a conductive core within it, the coaxial cable disposed in the passageway of each pin and box end tool joint, the coaxial cable running along the longitudinal axis of the pipe;

a first and second elongate looking body each having a first end, a second end, and an outer portion contained within the first and second cross ports, a portion of the first end adapted to engage the outer diameter of the conductive tube, the first end engaging the outer diameter of the conductive tube;

a first and second loading body, each loading body comprising a first end, a second end, and an outer portion contained within the first and second cross ports, the outer portion engaging the cross port, the first end forcefully engaging the second end of the elongate looking body placing the elongate looking body under compressive load.

29. The system of claim twenty-eight wherein the conductive tube has an elasticity such that the conductive tube is in tension.

30. The system of claim twenty-eight wherein the loading bodies are set screws

31. The system of claim twenty-eight wherein the set screws are torqued to at least 15 foot-pounds force.

32. The system in claim twenty-eight wherein the tube is tensioned between 300 and 1200 pounds force.

33. The system in claim twenty-eight wherein the first and second loading bodies' first end is a truncated cone.

34. The system in claim twenty-eight wherein the first and second cross ports have a threaded portion to accept a set screw.